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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,103	08/22/2003	Harry Liu	MICRON 214DDV1	8412
29995 7590 12/12/2007 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614				
EXAMINER PIZARRO CRESPO, MARCOS D				
ART UNIT 2814		PAPER NUMBER		
NOTIFICATION DATE 12/12/2007		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary

Application No.

10/646,103

Applicant(s)

LIU ET AL.

Examiner

Marcos D. Pizarro

Art Unit

2814

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-13 and 16 is/are rejected.
- 7) ☒ Claim(s) 14, 15 and 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-850)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 10/1/2007 and 10/29/2007

Attorney's Docket Number: MICRON.214DDV1

Filing Date: 8/22/2003

Claimed Priority Dates: 1/24/2002 (Divisional 10/057,162)
8/14/2000 (Divisional 09/638,419)

Applicant(s): Liu, et al.

Examiner: Marcos D. Pizarro-Crespo

DETAILED ACTION

This Office action responds to the petition to withdraw from issuance filed on 10/29/07.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after the notice of allowance mailed on 8/23/2007. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submissions filed on 10/1/2007 and 10/29/2007 have been entered.

Acknowledgment

2. The petition to withdraw from issuance filed on 10/29/2007, responding to the Office action mailed on 8/23/2007, has been granted. The present Office action is made with all previously suggested amendments and all previously submitted information disclosure statements being fully considered. Accordingly, pending in this Office action are claims 8-20.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8, 9, 12, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Yue (US5496759).

5. Regarding claim 8, Yue shows all aspects of the instant invention including a process for passivating a magneto-resistive bit structure characterized by the steps of:

- ✓ Providing a GMR stack upon a substrate **12** (see, e.g., fig. 2)
- ✓ Selectively patterning the GMR stack to form at least one GMR bit having a top surface and side walls (see, e.g., fig. 3)
- ✓ Providing a conductive etch stop barrier layer **58** that encapsulates the patterned GMR stack including the top surface and side walls of the bit (see, e.g., fig. 7)
- ✓ Selectively patterning the barrier layer so that the edges of the barrier layer extend out past the edges of the bit (see, e.g., fig. 7)

6. Regarding claim 9, Yue shows the process further comprising forming a diffusion barrier **56** between the etch stop barrier layer **58** and the patterned GMR stack (see, e.g., fig. 7).

7. Regarding claim 12, Yue shows all aspects of the instant invention including a process for passivating a patterned magneto-resistive bit structure in a magneto-resistive memory, the process comprising:

- ✓ Providing a substrate **12** with the patterned magneto-resistive bit structure having a top surface and side walls (see, *e.g.*, figs. 2 and 3)
 - ✓ Forming a conductive etch stop barrier layer **58** over the substrate with the patterned bit structure, the barrier layer covering the top surface and side walls of the bit structure
 - ✓ Patterning the conductive etch stop barrier layer **58** such that the layer is removed from portions of the substrate but remains on the top and side walls of the bit structure (see, *e.g.*, fig. 7)
8. Regarding claim 13, Yue shows the substrate comprising a monolithic integrated circuit (see, *e.g.*, fig. 1).
9. Regarding claim 16, Yue shows the process further comprising forming a diffusion barrier **56** before forming the etch-stop barrier layer **58** such that the diffusion barrier is formed between the etch-stop barrier layer and the substrate **12** with the patterned bit structure. Yue also shows the step of patterning the etch stop barrier layer comprising patterning the diffusion barrier. See, *e.g.*, fig. 7.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yue in view of Higashi (US6291891).

13. Regarding claims 10 and 11, Yue shows most aspects of the instant invention (see, *e.g.*, paragraphs 5-9 above). Yue also teaches that the barrier layer is photo cut and etched but fails to specify further details of the patterning step (see, *e.g.*, col.3/ll.20-23). Higashi, on the other hand, teaches to improve the processing accuracy of the barrier layer of Yue by forming a dielectric layer upon the barrier layer, removing parts of the dielectric layer to expose portions of the layer to be removed, and reactive ion etching to remove the exposed portions of the barrier layer. See, *e.g.*, Higashi: figs. 5B-5D and col.11/ll.14-25.

14. It would have been obvious at the time of the invention to one of ordinary skill in the art to include the steps suggested by Higashi in the process of Yue to improve the processing accuracy of the barrier layer.

Allowable Subject Matter

15. Claims 14, 15, and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

16. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Marcos D. Pizarro-Crespo** at **(571) 272-1716** and between the hours of 10:00 AM to 8:30 PM (Eastern Standard Time) Monday through Thursday or by e-mail via Marcos.Pizarro@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (571) 272-1705.

18. Any inquiry of a general nature or relating to the status of this application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair->

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direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

19. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 365/158,171-173; 438/3,48	11/30/2007
Other Documentation:	
Electronic Database(s): EAST (USPAT, EPO, JPO)	11/30/2007

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